Low Carbon Technology Guide

Solar electricity

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SP ENERGY NETWORKS

Contents

1. What is it?

Solar electricity panels (also known as photovoltaics or PV) are a renewable energy technology that use the energy from the sun to generate renewable electricity which can power your home. PV panels have multiple ‘solar cells’, usually made from silicon, and when the sun shines on them, they produce direct current (DC) electricity. However, DC electricity cannot be used to power electronics in your home. Therefore, a device called an inverter converts DC electricity to alternating current (AC) electricity, which can be fed into your home’s electricity circuit and used to power household appliances. PV panels can be installed on top of your roof, integrated into it, or via purchasing roof tiles with PV cells pre-integrated into them. Some PV panels can also be installed on the ground, such as in your garden or another outdoor space, assuming there is little to no shading during the day.

2. What should be considered before installation?

2.1 POSITIONING OF THE PV PANELS AND ROOF SPACE

Solar PV panels are usually installed on the roof, with an average system requiring around 20-25 square meters of space. For maximum efficiency, the panels should ideally be positioned on a predominantly south-facing roof with as little shading as possible from other buildings, chimneys or trees (shading reduces the performance of the panels). The panels will also add weight to your roof, so it must be strong enough to support the additional weight.

2.2 MAXIMISING THE BENEFITS OF SOLAR PV

Solar PV panels generate electricity during the day, so you should consider using larger appliances, such as a washing machine or dishwater during the daytime to make the most of your system. Additionally, you can consider installing battery storage which would store excess electricity generated during the day for when you need it. Another often cheaper alternative to battery storage would be to install a 'PV diverter switch' that would use any excess electricity generated to power the immersion heater in your hot water cylinder (assuming you have one installed), which would preheat water for you to use later. Finally, if you have a smart meter, you can potentially export excess electricity to the grid and get paid for it by applying for a Smart Export Guarantee (SEG) tariff.

3. How much does it cost?

According to the Energy Saving Trust, the average solar PV system costs around £6,500. The precise cost would depend on the size of the system, difficulty of installation and type of panels chosen, with on-the-roof panels being the cheapest option and solar tiles being the most expensive. The additional cost of a ground-mounted system is difficult to predict as it would depend on additional variables such as the distance from the house and the type of mounting frame. It is generally recommended to get quotes from at least three installers to get a good idea of how much the system would cost you.

4. What is the maintenance like?

Most solar PV systems require very little to no maintenance and PV panels should last for 25 years or more. On the other hand, the inverter would likely need to be replaced at least once within the 25 years, at the cost of around £800 (depending on the size and manufacturer of the system). Installers should leave written details of any maintenance checks that you can perform yourself to ensure that the system is operating normally. The PV panels might also require occasional cleaning to maximise their performance, especially if they are ground-mounted or if there are high dust levels in the air where you live.

5. How can I get it?

Solar PV systems require technical knowledge to be installed properly and should only be carried out by a qualified installer.

The Microgeneration Certification Scheme (MCS) is currently the standard and quality assurance organisation for renewable generation technologies. Their website provides the most up to date list of accredited installers in the UK.

6. What funding help is available?

6.1 HOME ENERGY SCOTLAND LOAN

If you live in Scotland and considering a solar PV system for your property, you could be eligible for an interest-free Home Energy Scotland Loan of up to £5,000.

6.2 SMART EXPORT GUARANTEE (SEG)

If you live in England, Scotland or Wales, you can potentially sell excess electricity generated by a solar PV system to the grid through Smart Export Guarantee (SEG).

6.3 ADDITIONAL FUNDING INFORMATION

Depending on where you live, below are some organisations that can advise you on the funding options that could be available to you.

England and Wales: Simple Energy Advice

Scotland: Home Energy Scotland

7. Useful websites

For more information on the solar electricity, please visit the following websites:

Energy Saving Trust

Which? Guide